

In re Application of: Ido MILSTEIN et al
Serial No.: 10/597,226
Filed: January 22, 2008
Office Action Mailing Date: October 7, 2011

Examiner: Nicole IPPOLITO RAUSCH
Group Art Unit: 2881
Attorney Docket: 35504
Confirmation No.: 7945

REMARKS

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 1-95 are in this Application. Claims 73-95 have been withdrawn from consideration. Claims 1-72 have been rejected under 35 U.S.C. § 101. Claims 1-5, 7-9, 11-14, 24-59 and 65-71 have been rejected under 35 U.S.C. § 102. Claims 6 and 33 have been rejected under 35 U.S.C. § 103. Claims 5 and 31-33 have been canceled herewith. Claims 1, 6-9, 15, 20, 24, 73, 77, 79, 81, 83, 86, 92 and 94 have been amended herewith. New claim 96 has been added herewith.

Amendments To The Claims

Claim 1 has been amended to add the limitation "digital" to "medical image data set" and to "data space". The amendment is supported, *inter alia*, on page 12, lines 4-5 of the published application.

Claim 1 has also been amended by adding the limitation of cancelled claim 5.

Claim 5 has been cancelled without prejudice.

Claims 6-9, 15 and 24 have been amended to dependent from amended claim 1, which includes the limitation of cancelled claim 5, rather than from cancelled claim 5.

Claim 20 has been amended to correct an error of antecedent basis, changing "said vessel" to "said tubular tissue".

Claims 31- 33 have been cancelled without prejudice.

Withdrawn claims 73, 77, 79, 81, 92 and 94 have been amended to add the limitation "digital" to "medical image data set". The amendment is supported, *inter alia*, on page 12, lines 4-5 of the published application.

Withdrawn claim 81 has also been amended to change the term "line" to the term "path", to correct antecedent basis and be consistent with its dependent claim 82,

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which uses the term "path cost". The term "path cost" is used extensively in the present application and claims.

Withdrawn claim 83 has also been amended to change the term "line" to the term "path", to correct antecedent basis with respect to amended claim 81.

Withdrawn claim 86 has been amended to add the limitation "digital" to "distance map".

New claim 96 includes previously presented claim 15, merged into its parent – previously presented claim 5, merged into previously presented claim 1. New claim 96 has also been amended to add the limitation "digital" to "medical image data set" and to "data space". The amendment is supported, *inter alia*, on page 12, lines 4-5 of the published application.

35 U.S.C. § 101 Rejections

The Examiner stated that **claims 1-72** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Specifically, in this instance, these claims pertain to a method that does not require a machine or transformation to be performed. If it could be shown that "in a medical image data set" and "automatically" have some type of meaning that would require the aide of a particular machine to perform the method steps, then the 101 rejection could be removed. However, as the claims read now, no machine is required, as the data set can well be a set of images already printed or otherwise produced, and the term "automatically" does not necessarily require a machine.

Applicants have amended **claim 1** to add the limitation "digital" to "medical image data set" and to "data space". Applicants submit that digital medical images are known in the art as requiring serious computing power in order to process. Applicants submit that the subject of the present claims is also digital image processing, being "A

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method of centerline determination for a tubular tissue in a digital medical image data set defined in a digital data space".

Applicants submit that amended claim 1 now overcomes the rejection under 35 U.S.C. 101.

Applicants submit that **claims 2-4, 6-30, and 34-72**, being dependent from amended claim 1, also overcome the rejection under 35 U.S.C. 101.

Moreover, Applicants submit that **claims 10, 15-23, and 60-64**, which were only rejected under 35 U.S.C. 101, should now be allowable.

Furthermore, since claims 10, 16-19, 21-23, and 60-64 have not been rejected except as claims dependent from a claim which was rejected under 35 U.S.C. § 101, and have not been changed in the present application, Applicants submit that the next Office Action should not be a final Office Action

35 U.S.C. § 102 Rejections

The Examiner stated that **claims 1-5,7-9, 11-14, 24-59 and 65-71** are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida et al. (U.S. Patent Application Publication Number 20050152588, hereinafter "Yoshida").

Applicants have amended **claim 1** to include the limitation of cancelled claim 5. The Examiner stated that in regards to claim 5, Yoshida teaches that automatically determining a path comprises determining using targeted marching which uses a cost function incorporating both path cost and estimated future cost (paragraph 0108, 0113, 0349-0353, etc.).

Applicants respectfully traverse the rejection of claim 5. Applicants submit that everywhere Yoshida teaches marching (paragraphs 0065, 0110, 0113, 0349, 0350,

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0352, 0353), Yoshida teaches "fast marching". Yoshida does not teach "targeted marching".

In fact, targeted marching is a subject of a patent application by some of the present inventors, as described in the "related Applications" section of the published application: "This application is also related to a PCT application entitled "Targeted Marching", having attorney's docket number 032/04082, being filed on an even date in the Israel Receiving Office, the disclosure of which is incorporated herein by reference." The above-mentioned application is now US published patent application 2008/0091340.

Applicants therefore submit that the rejection of claim 5 under 35 U.S.C. 102(e) as being anticipated by Yoshida et al is incorrect, and that claim 5 should have been allowed.

Since the limitation of claim 5 is now merged into amended claim 1, Applicants submit that amended claim 1 overcomes the rejection under 35 U.S.C. 102(e) as being anticipated by Yoshida et al, and should be allowed.

Applicants submit that **claims 2-4, 6-30, and 34-72**, being dependent from amended claim 1, also overcome the rejection under 35 U.S.C. 102(e) as being anticipated by Yoshida et al.

However, Applicants respectfully traverse some of the dependent claims, even were they not dependent from **amended** claim 1.

For example, the Examiner stated that in regard to **claim 70**, Yoshida teaches that finding a path for said centerline comprises targeting marching from at least one end of said segmentation (paragraphs 0108, 0113, 0349-0354, etc.).

Applicants respectfully traverse the rejection of claim 70. As argued above with reference to amended claim 1, Applicants submit that everywhere Yoshida

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teaches marching (paragraphs 0065, 0110, 0113, 0349, 0350, 0352, 0353), Yoshida teaches "fast marching". Yoshida does not teach "targeted marching".

Applicants therefore submit that the rejection of claim 70 under 35 U.S.C. 102(e) as being anticipated by Yoshida et al is incorrect, and that claim 70 should have been allowed.

Moreover, **claim 71** depends from claim 70, and should also be allowed even were it not now dependent from amended claim 1.

35 U.S.C. § 103 Rejections

The Examiner states that **claim 6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida as applied to claim 5 above, and further in view of Krishnamoorthy et al. (US. Patent Application Publication Number 20050110791, from hereinafter "Krishnamoorthy").

Applicants submit that **claim 6** should be allowed, at least by virtue of its dependence from amended claim 1.

The Examiner states that **claim 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida as applied to claim 1 above, and further in view of Yim (US. Patent Application Publication Number 20030031351, from hereinafter "Yim").

Applicants have cancelled **claim 33** without prejudice, so the rejection is now moot.

New claim 96

New **claim 96** includes previously presented claim 15, merged into its parent – previously presented claim 5, merged into previously presented claim 1. New claim 96 has also been amended to add the limitation "digital" to "medical image data set" and to "data space".

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New claim 96 is equivalent to previously presented claim 15, including the limitations of all its parent claims. Previously presented claim 15 was only rejected under 35 U.S.C. 101, and Applicants have amended the merged claim to overcome the rejection.

Applicants submit that new claim 96 is now allowable.

Furthermore, Applicants submit that the amendments for overcoming the rejection under 35 U.S.C. 101 should cause no further search. If new claim 96 is rejected as a result of an additional search, Applicants should be allowed an opportunity to answer the rejection of new claim 96 without the next Office Action being Final.

In view of the above amendments and remarks it is respectfully submitted that **claims 1-4, 6-30, 34-72 and 96** are now in condition for allowance. A prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,

/Jason H. Rosenblum/

Jason H. Rosenblum
Registration No. 56,437
Telephone: 718.246.8482

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Enclosures:

- Petition for Extension (Two Months)
- Additional Claims Transmittal Fee